

Health Evaluation Examinations in Industry

**Preplacement Examination
Periodic Examination
Screening New Applicants**



Division of Industrial Hygiene
NEW HAMPSHIRE STATE DEPARTMENT OF HEALTH

Industrial Health Committee
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HEALTH EVALUATION EXAMINATIONS IN
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With the rapid growth of technological developments in industry during the past quarter of a century and the passage of compensation laws for occupational diseases, the maintenance of the health of the working force in industry has become constantly of increasing importance. The responsibility of the employer has steadily broadened, due largely to the facts that the opportunity for the control of health conditions lies almost entirely in his hands with the full cooperation of all employees and that money losses due to sickness and accidents among the workers can be reduced to a minimum through active efforts in health supervision, plant safety, education and plant sanitation.

According to a survey conducted by the National Association of Manufacturers: "No plant, however small, can afford to be without a health program. The annual net profit to the average plant of 500 employees from the operation of a health program is \$5,611. The yearly loss to a company of 500 employees which operates without a health program may be seen to be \$39,000." In 1943, a survey by the National Association of Manufacturers showed that of 1,625 companies who were asked whether they considered health programs a paying proposition, all but five answered "Yes." Ninety-three per cent mentioned compensation insurance reduction of 28.86 per cent, 92 per cent had lower absenteeism of 29.7 per cent. Eighty-seven per cent had less labor turnover of 27.3 per cent. Occupational disease reduction 62.8 per cent. Accident frequency reduction 44.9 per cent.

The essential basis for health and accident control in industry is the physical examination. Without knowledge of the physical condition of the individual, it would be nearly impossible to develop the facilities required for conservation and betterment of health. Physical examinations should be

considered only as one of the means for the maintenance of a sound health program and when used for the purpose for which they are rightfully intended, proper placement of employees, may become the most important part of the medical control program.

While many organizations have been reluctant to institute physical examinations, fearing the antagonism of their employees to a compulsory procedure, it is a well known fact that physical examinations, well and fairly conducted, are a sound means for safeguarding health and direct betterment of the workers themselves. In addition, it is also a well known fact that a well conducted medical service in industry is one of the best means to good relationships between the working force and management.

There are two sorts of physical examinations which industry is particularly concerned with: (1) the preliminary examination of applicants for employment, and (2) the subsequent periodic examination of some or all workers at regular intervals during service in the organization.

Preplacement Examination. The preliminary examination of applicants for employment, the preplacement examination, is designed to accomplish the following:

1. Determination of those workers who are physically and mentally unfit for work and must be rejected.
2. Acceptance of workers who are physically and mentally capable of performing the work to be done without limitation.
3. Classification of workers with physical or mental defects so that they may be permitted to perform work which they are capable of doing, while at the same time they are protected from work which would be hazardous to them or in which they would constitute a menace to fellow workers.
4. Provides a means for the detection of remedial defects and the early discovery of chronic disease and deterioration.

Basically, this examination requires the evaluation of the worker in relation to his work requirements and consequent-

ly should be sufficiently detailed to permit the examining physician to formulate a reasonable opinion based on the worker's medical history and the findings of the examination. The nature of the work determines the extent of the examination, although the examination basically should be thorough and complete. Special diagnostic tests and examinations should be conducted on individuals where the work requires exposures to toxic materials.

Workers accepted for employment are further evaluated by the physician's examination and those found to have some defect or deformity must be afforded protection. Systems to facilitate the use of these physically substandard workers should be developed with the employment or personnel department. The physician should classify the employee's ability to work and this classification then is transmitted to lay supervisory personnel to be used for proper placement of the worker. Specific findings and diagnoses should never be revealed.

Classification should be meaningful, since general terms are relatively useless. The following classification system has been used successfully:

Group 1. Fit for all work

Group 2. Fit for work under periodic medical review

- Class 1. With limited physical exertion
- Class 2. In non-hazardous work
- Class 3. With orthopedic defect
- Class 4. With defective vision
- Class 5. With defective hearing
- Class 6. With neuromental handicaps (emotional instability, nervousness, etc.)
- Class 7. Albuminuria, sugar, cardiovascular
- Class 8. Alcohol

Group 3. Unfit for work at time of examination

In order to obtain the maximum value from the physical examination of an employee, it should be conducted in a manner that not only enables management to fit a workman

into a suitable job but also reveals information necessary for guidance in the maintenance of the health of the individual so that he may continue in his job effectively.

The examination should be given before the employee is actually hired and it should be conducted in private by the physician. Examination of women should not be carried out without the presence of a nurse or female attendant. The preliminary part of the examination, such as taking medical and surgical histories; recording weight, height, temperature; performing eye and ear tests, blood pressures, etc., may be made by a nurse or trained layman in order to save the doctor's time.

Record Forms for Preplacement Examinations. The preplacement examination form should be simple in arrangement, but containing in full detail the questions which must be answered with ample room for check marks or answers. It should be made up in such detail as not to be dependent upon the examiner's memory but without superfluous questions which are usually not truthfully or properly answered by the examinee. Thus, every question which is put to the applicant should appear in the form, although questions in regard to the history of venereal and mental diseases as well as conditions not generally known or understood may well be omitted, since they are seldom answered accurately. The record form should be made of durable material; cards are usually more conveniently handled than sheets of paper.

An example of a physical examination form used in industry is shown in Figure 1. Supplementary forms often used in connection with the physical examinations are: (1) a printed slip with a request for a physical examination which may be sent with the applicant to the plant physician from the employment department, and (2) a printed card or portion of the examination record itself, perforated so that it can be torn off, on which the doctor can indicate his classification of the applicant when returning him to the employment department.

The results of the preplacement examination should be regarded as strictly confidential and the full record of the examination should never leave the dispensary office; therefore, the card which is to be filed for review by the employ-

ment, personnel, or other departments usually classifies the worker according to his ability to work.

Periodic Examinations of Selected Employees. A periodic examination following the entrance examination is a logical procedure, particularly in respect to many workers who are employed in spite of minor impairments and such defects which may subsequently develop and cause trouble if not watched. In this group, disease or defects may be progressive and of a type not yielding readily to treatment or easily correctible. Newly developing acute communicable disease may be detected and the patient referred to his family physician. Chronic diseases which become disabling if allowed to advance may be to some extent controlled and careful supervision of those employed in specially hazardous occupations may be assured through the use of periodic examinations.

One of the most important functions of the periodic physical examination in industry is the early detection of industrial diseases and intoxications. Where workers are exposed to toxic materials such as fine silica dust, lead, benzol, mercury and its compounds, and other highly toxic substances, special diagnostic tests should be used to ensure that the worker is not absorbing harmful concentrations of these materials.

Periodic Health Examinations of the Entire Personnel. Some plants are so equipped as to extend to all employees periodic physical examinations regardless of their occupation in the plant. Such programs for the conservation of manpower produce significant benefits for both the employer and workers. The early detection of tuberculosis and diabetes, and the lengthening of the period of working life, particularly of highly skilled workers, are examples of benefits derived from such programs. One of the main purposes of the program is to conserve important personnel such as management and supervisory personnel who constitute a group that industry cannot operate successfully without. The task of guiding industry in these complicated times subjects executives to continuous nervous and emotional stimuli which frequently effect functional alterations with

accompanying disturbing symptoms. The invaluable assistance which a physician may render not only to the executives but also to all personnel in the organization is an asset which industry has recognized as one of its most important resources.

Medical Records. Medical records have great import not only from the standpoint of the plant physician and nurse but also to management. While the keeping of accurate, detailed records is an irksome task, the recording of information is an essential function in every phase of industry today. The keeping of adequate medical records pays dividends, especially in the event of litigation. These records should be so organized that management can readily determine (1) the overall problems of sickness among employees; (2) frequency and severity of occupational and non-occupational illnesses and injuries of the entire plant and of each department; (3) the relation of sick absenteeism to the type of work an employee does.

Accuracy is of the greatest importance in keeping of records. All information should be recorded at the time of the incident. It is always wise to write the employee's version of his illness or accident in a statement which indicates the source of the information. It should be kept in pen and ink, never with a pencil. Once a record is made it should not be altered nor should any erasures be made.

Two basic records necessary in any industrial health service are an individual record for each worker receiving service (Figure 1) and a daily log or tally sheet. These two forms may be elaborated depending upon the interests of management and the attitude of personnel. Most record systems contain the following forms: Individual records; Folder or jacket of preplacement physical examination; Periodic physical examination; Individual service record; Referral forms; Return to work permit; Physician's report to plant management; Administrative record; Daily log or tally sheet; Weekly, monthly and annual reports; Special graphs; Absentee reports. These forms are seldom all found in one plant. The forms to be adopted by any given plant will have to be modified to meet the needs of that particular plant.

The files of individual records should always be kept locked in the medical department and any information in them should be considered absolutely confidential except as it relates to injuries or disabilities due to employment. Upon termination of employment, the file folders should be sealed and placed in the inactive file.

A periodic review of these records will enable the industrial physician to detect accident proneness, the early signs and symptoms of disease, and perhaps a tendency to malingering. The physician's interpretation of the data in the employee's folder will serve as a basis for recommendations to the personnel department and other interested departments in the plant.

Screening of New Applicants for Employment. While it is much more desirable for all new employees to have physical examinations by a physician prior to assignment to any work in the plant, there are instances where it is not economically practical for management to pay the cost for a physician's services. In lieu of the preemployment physical examination for all new applicants, certain screening techniques can be used by the industrial nurse which will aid in the evaluation of the health status of the applicant and in the advisability of having a complete medical examination by a physician. By these techniques a certain amount of basic information can be obtained and through the nurse's medical training she is able to assist in the proper placement of the applicant in a type of work that he is physically and mentally able to perform. Through this system, management is able to reduce the costs required for medical examinations of the entire working force and at the same time can achieve a certain degree of efficiency in proper placement of new workers. It should be understood that these screening techniques are at best to be considered only as a poor substitute for the medical examination and should be replaced as soon as practical by plant management with medical examinations by physicians.

In the conduct of these screening tests, a nurse should work under the supervision of a physician and until the

nurse becomes completely familiar with the techniques, the physician should personally supervise her evaluations and classification of applicants.

Medical History. The taking of the medical history of an applicant often reveals important information in the evaluation of the applicant's physical and mental status. The nurse should converse with the applicant in a cordial manner and maintain a friendly atmosphere at all times.

Items to be included in the medical history are: Name (Maiden name in case of female applicants); Present address; Age; Marital status; Nationality; History of the following diseases in applicant or applicant's family: Tuberculosis, Diabetes, Heart trouble, Fainting spells, Arthritis, Hypertension and Allergies.

The surgical history should be taken as stated by the applicant and should include kind of operations and broken bones, with dates of operations or accidents.

A history should be taken of his military service, particularly in respect to any diseases that he may have suffered and particularly the theatre in which he has seen active duty. Data should be obtained on the duration of military service, reasons for his discharge, whether on points or for medical reasons; if the latter, the reason should be recorded. If the applicant was 4-F the reason for this classification should be stated. Definite questions should be asked regarding malaria, tropical diseases, wounds or injuries and trench foot. The date of the last physical examination should be recorded as well as the place where it was taken and any outstanding pathology that was found.

Physical Examination. Upon completion of the medical and surgical history, the following tests should be conducted.

1. Height and weight by medical scales.
2. Eye-screening tests should be done, using a wall chart. If instruments are available for eye examinations, they should be used and the results recorded on the physical examination form.
3. Hearing should be tested by the watch method.

4. Teeth should be inspected using a throat stick, and condition or loss of teeth recorded.
5. Throat should be inspected using a throat stick, and any general abnormalities recorded.
6. Inspection of arms and hands: applicant stands facing the examiner with arms stretched out and fingers spread apart. Notation should be made of any defects or tremors, abnormal biting of nails, dry skin, eczema or rashes.

Request the applicant to flex forearms acutely until fingers touch the shoulders; raise elbows anteriorly as far as possible; follow by bending over and touching the ground, resume erect position, squat on heels and rise to original position; abduct first one leg and then the other; rotate the head side to side.

These motions can be gone through rapidly and every important joint in the body will have been tested. If any defect in a joint is observed, such notation should be made on the examination form.

7. Legs. Any abnormality of the feet which is observed, such as flat feet, should be recorded. Varicose veins should be noted.
8. Skin. Observation should be made of skin about the face and neck, hands, for the presence of acne and any other abnormal condition.
9. Blood Pressure. Systolic and diastolic blood pressure should be taken and recorded.
10. Urine specimen should be obtained and tests made for sugar and albumin.
11. Under "Remarks" of the examination form, notation should be made of any unusual appearance, deformity or mentality.

Upon completion of the above items, the nurse evaluates the applicant's health status and classifies him according to two groups:

- A. Fit for all work.

B. Fit for work with periodic examination of special defects which may be classified generally as follows:

- 1) With limited physical exertion
- 2) In non-hazardous work
- 3) With orthopedic defect
- 4) With defective vision
- 5) With defective hearing
- 6) With neuromental handicaps (emotional instability, nervousness, etc.)
- 7) Albuminuria, Sugar, Cardiovascular
- 8) Alcohol

Applicants are not considered unfit for work except upon medical examination by a physician.

Figure 1 can be used by the nurse in performing the techniques for screening new applicants for work by completing the items marked by an asterisk.

As soon as the applicant has been classified by the nurse, the classification is sent to the employment or personnel office for their use in proper placement of the applicant.

The nurse always should refer to a physician applicants whom she believes to be unfit for work and also those applicants who have defects or conditions which should receive medical attention prior to or during employment. The physical examination form with the screening data can be given to the examining physician for his use in the medical examination. However, all forms with findings and classifications should be returned and kept in the dispensary files at the plant. With proper instruction and supervision the nurse can become very efficient in these techniques and her work will be a great asset to management in the reduction of absences from work due to sickness and injury, compensation costs, and in the provision of continuous protection of the health of the employees.

Figure 1.

PHYSICAL EXAMINATION
Screening by Nurse

*Name		*Address		*Department		*Operation	
*Age	*S.M.W.D.	*Nationality		*Male		*Female	
*Medical History: TB.	Diabetes	Heart	Hypertension	Fainting Spells	Arthritis	Allergies	
*Surgical History:							
*War Record: U.S.	E.T.O.	Pac.	Duration	Disch.	Points	Medical	
*4F	Malaria	Tropical Diseases		Wounds or Injuries		Trench foot	
*Date of Last Physical Examination		*Place		*Pathology			
RE-EXAMINATIONS							
*DATE							
*Height: Ft.	In.	*Weight	Lbs.				
*General Appearance		*Alcohol					*PHYSICALLY
*Eyes	Corrected						First Class
Vision—Far: Rt.	Lt.	Rt.	Lt.				Defective
Near: Rt.	Lt.	Rt.	Lt.				Unit
*Ears	Hearing	Rt.	Lt.				*MENTALLY
*Nose	Throat						Alert
*Teeth: Good	Med.	Poor	Artificial				Average
*Neck (General Appearance)							Dull
*Arms and Hands							*SUMMARY AND
*Back (deformities)	*Skin						RECOMMENDATIONS
Heart	*Pulse						A. Fit for all work
Lungs							B. Fit for work under periodic medical review:
Hernia	Ing.	Fem.	Umb.				1. With limited physical exertion
*Legs	*V.V.	*Feet					2. In non-hazardous work
Abdomen							3. With orthopedic defect
*Blood Pressure	Sys.	Dias.					4. With defective vision
*Catamenia	*Dysmen.						5. With defective hearing
*Children	*Misc.						6. With neuromental handicap
*Reflexes	*K.J.	*Tremor					7. Albuminuria Sugar
Rectal	Hemorrhoids	Fistula					8. Cardiovascular
G.U.							Alcohol
*Laboratory Data							C. Classification with physician
*Urine: *Sp. Gr.	Reac.	*Alb.	*Sug.				*RATING:
Acetone	Diacetic	Bile					
Blood	Hgb	Hinton					
X-ray							

*Items to be accomplished by the nurse in screening new applicants

REMARKS:

Nurse.....
Doctor.....

